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(54) Disposable diaper

Wegwerfwindel

Couche-culotte jetable

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(73) Proprietor: **Kao Corporation**
Chuo-ku
Tokyo 103-8210 (JP)

(72) Inventors:
- **Koyama, Takao**
  Tochigi (JP)
- **Ito, Hidekazu**
  Tochigi (JP)
- **Nemoto, Ken**
  Tochigi (JP)
- **Ishiguro, Kenji**
  Tochigi (JP)

(74) Representative: **Vossius & Partner**
Siebertstrasse 4
81675 München (DE)

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Description

[0001] This invention relates to a disposable diaper excellent in leak-preventive property and capable of preventing leak occurrable particularly around the leg areas. This invention also relates to a disposable diaper excellent in storability/retainability of an auxiliary absorber, wearability (property of feel in wear and easy application to a wearer) and/or fitness at the crotch region and the like, in addition to its excellent leak-preventive property.

[0002] Heretofore, it has been an important problem for disposable diapers how to prevent leak occurrable around the leg areas. Japanese Patent Publication No. 05-33630 discloses a disposable diaper in which an absorbent core is comprised of a central absorbent section of a width in conformity with the human body and an outer absorbent section disposed outside thereof so that close fit to a wearer at the crotch region is enhanced, thereby improving the leak-preventive property. However, this disposable diaper has such a problem that wrinkles are liable to occur to the central absorbent section due to contraction of an expansible part placed between the central absorbent section and the outside absorbent section, and therefore urine and excretions can easily leak from the central absorbent section along the wrinkles. Moreover, since it is designed such that leak is prevented by enhancing the fit at the central absorbent section, those urine and excretions leaked out towards the opposite sides from the central absorbent section can reach the outside absorbent section comparatively easily, and especially, in case the amount of excretions is large, those feces and urine easily leak outside beyond the outside absorbent section.

[0003] Moreover, since the outside absorbent section is difficult to deform along the contour of the wearer's body, wearability and fitting property at the crotch region are deteriorated.

[0004] Japanese Patent No. 2712044 discloses a disposable diaper in which three-dimensional guards each composed of an absorbent material are disposed at the outside of the an absorbent core in a longitudinal direction thereof This diaper also has the same problem as the above-mentioned disposable diaper.

[0005] Another problem of the disposable diaper of Japanese Patent Publication No. 05-33630 is that it is not easy for a wearer to put it on because this diaper does not deform to the curved configuration of the wearer's body at the time of putting it on.

[0006] In the disposable diaper of Japanese Patent Publication No. 05-33630, the outside absorbent section is brought into contact with the inner side of the wearer's upper thigh. However, in this disposable diaper, the outside absorbent section is liable to be turned over at an area in the vicinity of the boundary area between a stomach side region and/or the back side region where the central absorbent section and the outside absorbent section are placed on a same plane and brought into contact with the wearer and the crotch region where the outside absorbent section and the central absorbent section are greatly bent, and leak may occur through a gap formed between the outside absorbent section and the wearer's skin. Moreover, it is difficult for this disposable diaper to sufficiently fit with the outside absorbent section to the inner side of the wearer's upper thigh. In short, in the conventional disposable diapers, sufficient leak-preventive property is not yet realized even for those of the type in which an absorbent core is disposed around the leg area.

[0007] Recently, it was attempted in order to reduce the economical/ laborious burden in nursing work or the like that an auxiliary absorber is used in combination with a disposable diaper. However, the conventional disposable diaper is deteriorated in storability/retainability of the auxiliary absorber and its improvement is demanded.

[0008] Japanese Patent Application Laid-Open No. 01-119250, Japanese Utility Model Application Laid-Open No. 04-67427 and Japanese Utility Model Application Laid-Open No. 02-18824 disclose disposable diapers having a side absorbent core. However, even in those disposable diapers, the side absorbent core cannot fit to the wearer's leg area sufficiently. Furthermore, even in disposable diapers disclosed in Japanese Patent Application Nos. 03-121069 and 03-123553, sufficient leak-preventive property cannot be achieved.

[0009] An object of the present invention is to provide a disposable diaper capable of fitting its second absorbent core disposed portion having a fluid retainability closely to the wearer's skin, excellent in fitness to the inguinal area and capable of surely preventing leak occurrable around the leg areas.

[0010] The present invention has achieved the above-mentioned objects by providing a disposable diaper comprising a fluid-permeable topsheet, a fluid-impermeable backsheet and a fluid-retentive absorbent core interposed between the topsheet and the backsheet, the disposable diaper having a stomach side, a back side and a crotch region positioned between the stomach side and the back side, leg portion elastic members being disposed in their stretched states at a pair of leg portions disposed around the wearer's leg areas, wherein lengthwise opposite end portions of the leg portion elastic members are located at widthwise outside areas of side edges of the absorbent core, respectively and central portions of the leg portion elastic members are curved in such a manner as to pass a widthwise inner direction of the side edges of the absorbent core at a crotch region of the diaper, the absorbent core at the crotch region of the diaper is divided into a pair of second absorbent cores located at widthwise outside areas of the leg portion elastic members, respectively and a central absorbent core located between the pair of second absorbent cores by the pair of leg portion elastic members, and the second absorbent cores are, when in wear, bent towards the backsheet.

[0011] The present invention will be more particularly described with reference to the accompanying drawings,

in which:

Fig. 1 is a perspective view showing a disposable diaper according to one embodiment of the invention;
Fig. 2 is a partly cut-out plan view showing a developed state of the disposable diaper of Fig. 1;
Fig. 3 is a schematic sectional view taken on line X-X of Fig. 2,
Fig. 4 is a schematic view showing a worn state of the disposable diaper of Fig. 1; and
Fig. 5 is a sectional view of an important portion showing a disposable diaper according to another embodiment of the invention.

[0012] Preferred embodiments of the invention will be described hereinafter. A disposable diaper 1D as one embodiment of the invention is a shorts type disposable diaper. As shown in Figs. 1 to 3; the disposable diaper ID comprises an absorbent main body 110 including a fluid-permeable topsheet 2, a fluid-impermeable backsheet 3 and a fluid-retentive absorbent core 40 interposed between the topsheet 2 and the backsheet 3, and an outer layer body 120 located at an outside area (outer surface side of the diaper) of the absorbent main body 110 and to which the absorbent main body 110 is fixedly joined. Opposite side edges A1, A2 of a stomach side region A which is arranged on the wearer's stomach side at the time of putting on the diaper and opposite side edges B1, B2 of a back side region B which is arranged on the wearer's back side at the time of putting on the diaper are joined together by known joining means such as heat sealing, high frequency sealing, ultrasonic sealing and the like, thereby forming a waist opening portion 15 and one pair of leg opening portions 16,16.

[0013] The absorbent main body 110 has a vertically elongated square configuration. The absorbent main body 110 is joined to a widthwise central portion of the outer layer body 120 with its longitudinal direction aligned with a direction (up and down direction of Fig. 2, hereinafter sometimes referred to as the "longitudinal direction" of the diaper) for connecting the stomach side region A and the back side region B of the disposable diaper 1D which is in a developed state. The absorbent core 40 has an outer contour of a vertically elongated square configuration which is generally same as the absorbent main body 110, and is fixedly sandwiched between the topsheet 2 and the backsheet 3.

[0014] A plurality of waist elastic members 151 for forming a waist gather are arranged at predetermined intervals along an opening edge portion thereof, and a substantially continuous annular waist gather is formed over an entire circumference of the waist opening portion 15.

[0015] A leg portion elastic member 161 for forming leg gather is disposed in its stretched state on each of one pair of leg portions 60, 60 arranged around the wearer's leg area. Each leg portion elastic member 161 comprises a first elastic member 161a disposed over the crotch region C from the stomach side region A and a second elastic member 161b disposed over the back side region B from the crotch region C. The first elastic member 161a and the second elastic member 161b are overlapped with each other at the crotch region C and function substantially same as a continuous elastic member.

[0016] The absorbent core 40 at the diaper crotch region (region disposed at the wearer's crotch in wearing) C is sectioned at least at one part of its longitudinal direction (same direction as the longitudinal direction of the diaper) into one pair of second absorbent cores 143, 143 which are located at widthwise outside areas of the locations of the leg portion elastic members 161 and a central absorbent core 142 which is located between the pair of second absorbent cores 143, 143, by the leg portion elastic members 161, 161. The central absorbent core 142 is located at a widthwise center of the diaper crotch region C, while the second absorbent cores 143, 143 are located at opposite left and right sides of the central absorbent core 142.

[0017] In this embodiment, the absorbent core 40 at the diaper crotch region C includes one pair of low rigidity regions 4A, 4A which are spaced apart from the opposite left and right side edges 141, 141 in a longitudinal direction of the absorbent core 40 and which are lower in rigidity than other parts. The pair of low rigidity regions 4A, 4A are formed along the longitudinal direction of the absorbent core 40. The second absorbent core 143 sectioned by the leg portion elastic member 161 is bent at its topsheet 2 side outward in a widthwise direction of the diaper by the elastic shrinking force of the leg portion elastic member 161 at the time of putting on the diaper. That is, as shown in Fig. 4, the second absorbent core 143 is bent towards the backsheet 3 side serving the part of arrangement of the leg portion elastic member 161 as a bending line. By this, since the fluid-retentive absorbent core is disposed along the leg part of the wearer, the leak-preventive property is high compared with the conventional one.

[0018] The leg portion elastic member 161 is, as shown in Fig. 2, disposed in such a manner as to be curved in a generally arc shape. One end portion 162 of each leg portion elastic member 161 located on the stomach region A side and the other end portion 163 located on the back side region B are located at the widthwise outside areas of the side edge of the absorbent core 40. A central part 164 of each leg portion elastic member 161 passes a widthwise inside area of the side edge 141 of the absorbent core 40 in the diaper crotch region C. More specifically, the central part 164 of each leg portion elastic member 161 passes the low rigidity region 4A. The expression "the central part 164 of each leg portion elastic member 161 passes the low rigidity region 4A" includes a case in which the central part 164 of each leg portion elastic member 161 passes the thickness-wise outer surface Q side of the absorbent core 40, for example, the low rigidity region 4A passes a part corresponding to the

low rigidity region A within the outer layer body 20 as in this embodiment. The central part 164 of each leg portion elastic member 161 refers to whole area of the leg portion elastic member 161 only excepting its opposite end portions 162, 163. It suffices that at least a part of the central part 164 passes a widthwise inside area of the side edge 141 of the absorbent core 40 in the crotch region C.

[0019] From the view point of surely enhancing the leak-preventive property, at least the area in the vicinity of the central portion of each leg portion elastic member 161 which divides the longitudinal direction of the leg portion elastic member 161 into two equal parts is located in the low rigidity region 4A. The length (length measured along the longitudinal direction of the diaper) L10 of the leg portion elastic member 161 passing the inside of the low rigidity region 4A is preferably from 10 to 50 % and particularly preferably from 20 to 40 % with respect to the entire length L11 of the absorbent core 40, and preferably from 5 to 40 % and particularly preferably from 15 to 30 % with respect to the longitudinal length L12 of the diaper 1D. The various values are based on the dimensions measured in a state that the joined side parts of the diaper are all peeled off each other and the diaper is developed and held in a tensioned state (the elastic members of the various parts are stretched, see Fig. 2).

[0020] In the disposable diaper 1D according to this embodiment, since the leg portion elastic member 161 is disposed in the manner as described above, a gap is hardly formed between the second absorbent core disposed portion (region where the second absorbent core 143 is disposed) 111 and the wearer's skin even at an area in the vicinity of the boundary between the stomach side region A and the crotch region C and at an area in the vicinity of the boundary between the back side region B and the crotch region C. Accordingly, no leak of excretions from the nearby areas of the two boundaries occurs. Moreover, since the leg portion elastic member 161 is disposed in the manner as described above, the diaper ID is, as shown in Fig. 4, bent serving the part of arrangement of the leg portion elastic member 161 as a bending line and the area in the vicinity of the bent portion nicely fits to the inguinal part. Accordingly, even if the excretions migrate in the direction of the second absorbent core disposed portion 111 from the top of the central absorbent core 142, they are prohibited from migration by the nearby area of the bent portion. That is, this disposable diaper is more excellent in leak-preventive property.

[0021] The longitudinal length L13 of the second absorbent core 43 is preferably from 1/5 to 2/3 the longitudinal length L12 of the diaper. If the length of the second absorbent core 143 is in this range, the diaper is easily bent such that a sufficient length of the second absorbent core 143 is brought into contact with the wearer's leg area when the diaper is applied to the wearer. Accordingly, a gap is restrained from being formed between the leg area and the diaper and thus, the leak-preventive property is further enhanced. Although it is most preferable that the first and second elastic members 161 a, 161b constituting the leg portion elastic members 161 are continuous in the crotch region C as in this embodiment, the two elastic members 161a, 161b may be slightly spaced apart from each other inasmuch as that the second absorbent core 143 is bent towards the backsheet 3 side and no gap is formed between the second absorbent core disposed portion and the wearer's skin. In this case, it is accepted that the end portions of the first and second elastic members 161a, 161b are located in the low rigidity region 4A and spaced apart from each other. It is also accepted that the first elastic members 163a on the left and right sides and the second elastic members 161b on the left and right sides may be continuous with each other through a communication part traversing the central absorbent core 142. It should be noted, however, that in the case where the elastic members 161a, 161b are spaced apart from each other, the spaced apart distance between them should be as small as possible taking into consideration the rigidity of the absorbent core because there is a possibility that the curved shape is adversely affected by the wearer's wearing state.

[0022] In the present invention, since the low rigidity regions 4A are disposed at opposite left and right sides of the absorbent core 4 and the central portion of each leg portion elastic member 161 passes the low rigidity region 4A, the absorbent core 40 can easily be bent, and the fitness to the wearer's leg area of the second absorbent core 143 can is enhanced. Thus, the leak-preventive property is readily exhibited. The method for forming the low rigidity region 4A is not particularly limited inasmuch as the rigidity of a part of the absorbent core can be made lower than the rigidity of the rest part. For example, there can be listed a method for cutting a part of the absorbent core 40 into a given shape, a method for making a part of the absorbent core 40 have a lower basis weight than the rest part, a method for making a part of the absorbent core 40 thinner than the rest part, a method for forming a part of the absorbent core 40 from a more flexible material than the rest part, a method of any combination thereof, and the like. As a method for forming the low rigidity regions 4A, 4A, a method according to this embodiment as later described or a method for cutting a part of the absorbent core 40 is preferable.

[0023] The low rigidity regions 4A, 4A of the diaper ID according to this embodiment are formed by making the basis weight (weight per unit area) of the absorbent core in the region lower than that of the absorbent core in the adjacent part. The ratio (low rigidity region / inner side adjacent part) between the basis weight of the low rigidity region 4A and the basis weight of the absorbent core in a part adjacent to an inner side thereof, and the ratio (low rigidity region / outer side adjacent part) between the basis weight of the low rigidity region 4A and the basis weight of the absorbent core in a part adjacent to an outer side thereof are preferably from 0 to 0.5. The difference in basis weight between the low rigidity region 4A and the inner side adjacent part, and between the low rigidity region 4A and the outer side adjacent part is preferably

at least 100 g / m^2 or more and particularly preferably 200 g / m^2 or more.

[0024] In the diaper 1D according to this embodiment, the second absorbent core disposed portion elastic member 17 is disposed at the diaper outer surface Q side of the second absorbent core 143 and more specifically, at the diaper outer surface Q side of a part located at an outside area of the outer edge 44 of the low rigidity region 4A in the second absorbent core along the longitudinal direction of the second absorbent core 143. Moreover, the second absorbent core disposed side elastic members 18 are disposed at the opposite side edge portions of the absorbent core 40 along the opposite side edges 141, 141 of the absorbent core 40. The two elastic members 17, 18 in this embodiment are disposed from the stomach side region A over to the back side region B.

[0025] By providing the second absorbent core disposed portion elastic members 17 and/or the second absorbent core disposed side elastic members 18, fitness with respect to the leg area can be further enhanced, and thus, leak can be prevented more surely. However, in the case where the second absorbent core disposed portion elastic members 17 and/or the second absorbent core disposed side elastic members 18 are provided, if the elongation stress of those elastic members is large, there is a fear that the second absorbent cores are irregularly bent at an area other than the area where the leg portion elastic member is disposed and fitness to the leg area of the wearer is lowered. From the view point of preventing the above-mentioned inconvenience and surely enhancing the fitness to the leg area, the second absorbent core disposed portion elastic member 17 and/or the second absorbent core disposed side elastic member 18 are preferably lower in elongation stress than the leg portion elastic member 161.

[0026] In the case where the second absorbent core disposed portion elastic member 17 and the second absorbent core disposed side elastic member 18 are disposed at opposite sides of the diaper, or in the case where two or more of the elastic members 18 are disposed at opposite sides of the diaper, the total elongation stress of the elastic members 17, 18 disposed at one side of the diaper is preferably lower than the elongation stress of the leg portion elastic member 161 disposed at the same side. The elongation stress of the second absorbent core disposed portion elastic member 17, the second absorbent core disposed side elastic member 18 and the leg portion elastic member 161 can be measured as follows. Test pieces are cut out each having a longitudinal length of 100 mm in a shrunk state with respect to the second absorbent core disposed portion 111 and the low rigidity region A in the crotch region C of the diaper ID and they are subjected to a tensile test using a tensile test machine (manufactured by Orientic Corp., 50 mm in chuck distance and 300 mm/min in test speed) and the stress at 25 % stretching is measured. The results are converted in terms of the test piece width to obtain the respective elongation stresses.

[0027] The opposite side edges 141 of the absorbent core 40 in the diaper 1D according to this embodiments are covered with a water-repellent side sheet 19. Each side sheet is formed in the shape of belt. One side edge portion of each side sheet is joined to the topsheet at the skin contact surface P side of the absorbent core 40, and the other side edge portion is joined to the backsheet 3 at the non-contact surface (same surface as the outer surface Q) side. Liquid ooze from the second absorbent core 143 can be prevented by covering with the side sheet 19. The other side edge portion of the side sheet 19, as shown in Fig. 5, may be joined to an extended part of the backsheet 3 which is extended from a side edge 141 of the absorbent core 40.

[0028] This disposable diaper ID includes one pair of three-dimensional gathers 112, 112 which are formed from the stomach side region A over to the back side region B. Each three-dimensional gather 112 has a free end 113 at a widthwise inner side of the absorbent main body 10 and a fixed end (basal end) at an outer side. An elastic member 116 for forming the three-dimensional gather is fixedly arranged, in its stretched state, at the free end 113 of each three-dimensional gather 111 alone the free end 113. Each three-dimensional gather 112 is provided by fixing the water-repellent gather forming sheet 115 having the elastic member 116 to the topsheet 2. The gather forming sheet 115 and the side sheet 19 are spaced apart from each other. Between those sheets 115 and 19, a side absorbent region 117 having a non-water-repellent surface is formed. Since the disposable diaper according to this embodiment has the above-mentioned construction, even if urine, etc. leak out beyond the arrangement part of the leg portion elastic member 161, they can be absorbed through the side absorbent region 117. Thus, the occurrence of leak can more surely be prevented.

[0029] In the disposable diaper ID according to this embodiment, the first and second elastic members 161a, 161b forming one of the pair of left and right leg portion elastic members 161 and the first and second elastic members 161a, 161b forming the other are divided. Those elastic members are not present at least at the widthwise central part of the crotch region C. That is, the first and second elastic members 161a, 161b include a portion extending towards the central portion in a widthwise direction of the diaper from the portion for forming the leg portion elastic member 161. An end portion of the extended portion is located slightly inside of the side edge portion of the central absorbent core 142.

[0030] A plurality of body peripheral portion elastic members 118 are arranged at prescribed intervals on a body peripheral portion DS of the stomach side region A and back side region B. The body peripheral portion DS refers to a portion which is located bellow the position where the waist portion elastic member 151 is disposed but above the leg opening portions 16, 16 in a state that the waist opening portion 15 faces upward, as shown in Fig. 1. The body peripheral elastic members 118 are fix-

edly arranged at least at an outside area of the opposite side edges 141, 141 of the absorbent core such that elastic stretchability can be exhibited. At least at a widthwise central portion M of the portion where the absorbent core 40 exists, the body peripheral elastic members 118 are not arranged or no elastic stretchability is exhibited. The expression "no elastic stretchability is exhibited" refers to a state in which although the elastic member is arranged, elastic stretchability is lost at that portion by thermal treatment such as heat sealing or the like, or the stretched state is released so as not to exhibit elastic stretchability.

[0031] In the diaper 1D according to this embodiment, the elastic members 151, 161 and 181 are all fixed through an adhesive agent between the two sheet materials 21, 22 constituting the outer layer body 20, i.e., between the inner layer sheet 121 and the outer layer sheet 122 forming the outer surface.

[0032] The material for forming the component members of the disposable diaper ID according to this embodiment will now be described. As the material for forming the topsheet 2, the backsheet 3, the absorbent core 40, the inner layer sheet 121, the outer layer sheet 122 and the like, those which has heretofore been used for disposable diapers or the like can be used without any particular limitation.

[0033] As the elastic members of the various portions, various kinds of elastic members which have heretofore been used for shorts type disposable diapers or the like can be used. As examples of the raw material for forming the elastic member, there can be listed, for example, synthetic rubber such as styrene-butadiene, butadiene, isoprene, neoprene and the like, natural rubber, EVA, expansible polyolefin, spandex, foam urethane, and the like. As examples of a form of the elastic member of the various portions, there can be used various kinds of forms. The form of the elastic members 151, 161 (161a, 161b) is preferably a belt-like one having a predetermined width (flat rubber, and the like). The form of the elastic member 118 is preferably a thread-like one (thread rubber and the like), while the form of the elastic members 17, 18, 116, a thread-like one (thread rubber or the like), a thread-like one having a predetermined width (flat rubber or the like) and a film-like one (urethane film or the like) are preferable.

[0034] As the material of the side sheet 19 and the three-dimensional gather forming sheet 115, various kinds of water-repellent sheet materials which have heretofore been used for shorts-type disposable diapers or the like can be used. For example, span bond nonwoven fabric, and span bond-melt blown-span bond nonwoven fabric are preferable.

[0035] The invention is not limited to the above-mentioned embodiments and it can be changed and modified in accordance with necessity and without departing from the gist of the present invention. For example, the present invention can be applied not only to the shorts-type disposable diaper but also to a so-called flat-type disposable diaper in which a fastening tape is disposed at each opposite side edge portion of the back side region. The present invention can be applied to a disposable diaper in which the topsheet and the backsheet form the outer configuration of the diaper and which does not include an outer layer body. Instead of an arrangement in which a low rigidity region is provided, as in this embodiment, so that the diaper is easily bent at the position where the leg portion elastic member is disposed, it may be designed such that the second absorbent core is readily bent by reducing the rigidity of the whole absorbent core or by preliminarily providing a folding line. It suffices that the low rigidity region is spaced apart at least at a part thereof from the side edge of the absorbent core. For example, it is also accepted that the low rigidity region is curved in an arc-like shape such that the low rigidity region is spaced apart at its central portion from the side edge of the absorbent core but it reaches the side edge at its opposite end portions. The outer configuration of the absorbent core is not limited to a square shape but it may be formed in a trapezoidal shape and a hourglass shape. The configuration of the low rigidity region may be formed in a spindle shape, a square shape and the like. The leg portion elastic member is not limited to those which is composed of the first and second elastic members but it may be those which is composed of a single piece of elastic member.

[0036] In the disposable diaper of the invention, the leg flap portion having a fluid absorptive/retentive performance can be closely fit to the wearer's skin. This diaper is excellent in fitness to the wearer's inguinal portion and capable of surely preventing leak around the leg area.

Claims

1. A disposable diaper comprising a fluid-permeable topsheet, a fluid-impermeable backsheet and a fluid-retentive absorbent core interposed between said topsheet and said backsheet, said disposable diaper having a stomach side, a back side and a crotch region positioned between said stomach side and said back side, leg portion elastic members being disposed in their stretched states at a pair of leg portions disposed around the wearer's leg areas, wherein

lengthwise opposite end portions of said leg portion elastic members are located at widthwise outside areas of side edges of said absorbent core, respectively and central portions of said leg portion elastic members are curved in such a manner as to pass a widthwise inner direction of the side edges of said absorbent core at a crotch region of said diaper,

said absorbent core at said crotch region of said diaper is divided into a pair of second absorbent cores located at widthwise outside areas of said leg portion elastic members, respectively and a central absorb-

ent core located between said pair of second absorbent cores by said pair of leg portion elastic members, and
said second absorbent cores are, when in wear, bent towards said backsheet.

2. The disposable diaper according to claim 1, wherein a longitudinal length of said second absorbent cores is 1/5 to 2/3 of a longitudinal direction of said diaper.

3. The disposable diaper according to claim 1 or 2, wherein second absorbent core disposed portion elastic members are disposed at a diaper outer surface side of said second absorbent cores along a longitudinal direction of said second absorbent cores, and said second absorbent core disposed portion elastic members are lower in elongation stress than said leg portion clastic members.

4. The disposable diaper according to claim 1, 2 or 3 wherein leg flap side elastic members are disposed at the opposite side edge portions of said absorbent core at the crotch region of said diaper along the opposite side edges of said absorbent core, and said leg flap side elastic members are lower in elongation stress than said leg portion elastic members.

5. The disposable diaper according to any of claims 1 to 4, wherein said absorbent core a crotch region of said diaper includes a pair of lower rigidity regions than the rest regions, said pair of lower rigidity regions being located away from the opposite side edges of said absorbent core, and
said leg portion elastic members are disposed such that their central portions pass said lower rigidity regions, respectively.

6. The disposable diaper according to any of claims 1 to 5, wherein the opposite side edge of said absorbent core are covered with water-repellent side sheets, respectively, a pair of three-dimensional gathers are formed from a stomach side region to a back side region, each of said three-dimensional gathers is fixedly provided with a water-repellent gather forming sheet having an elastic member, said gather forming sheet and said side sheet are located away from each other, and a side absorption area having a non-water-repellent surface is formed between said gather forming sheet and said side sheet.

Patentansprüche

1. Wegwerfwindel, die eine flüssigkeitsdurchlässige obere Lage, eine flüssigkeitsundurchlässige hintere Lage und einen flüssigkeitsspeichernden absorbierenden Kern aufweist, der zwischen der oberen Lage und der hinteren Lage angeordnet ist, wobei die Wegwerfwindel eine Bauchseite, eine Rückseite und einen Schrittbereich aufweist, der zwischen der Bauchseite und der Rückseite angeordnet ist, wobei elastin sche Beinabschnittelemente in ihren gedehnten Zuständen an einem Paar Beinabschnitte angeordnet sind, die um die Beinbereiche des Trägers angeordnet sind, wobei der Länge nach gegenüberliegende Endabschnitte der elastischen Beinabschnittelemente jeweils an der Breite nach äußeren Bereichen der Seitenkanten des absorbierenden Kerns angeordnet sind, und mittlere Abschnitte der elastischen Beinabschnittelemente in einer solchen Weise gekrümmt sind, dass sie an einem Schrittbereich der Windel der Breite nach in eine Innenrichtung der Seitenkanten des absorbierenden Kerns verlaufen,
der absorbierende Kern am Schrittbereich der Windel durch das Paar der elastischen Beinabschnittelemente in ein Paar zweiter absorbierender Kerne, die jeweils an der Breite nach äußeren Bereichen der elastischen Beinabschnittelemente angeordnet sind, und einen mittleren absorbierenden Kern unterteilt ist, der zwischen dem Paar der zweiten absorbierenden Kerne angeordnet ist, und
die zweiten absorbierenden Kerne, wenn sie getragen werden, zur hinteren Lage gebogen sind.

2. Wegwerfwindel nach Anspruch 1, wobei eine Längslänge der zweiten absorbierenden Kerne 1/5 bis 2/3 der Längsrichtung der Windel beträgt.

3. Wegwerfwindel nach Anspruch 1 oder 2, wobei an Abschnitten der zweiten absorbierenden Kerne angeordnete elastische Elemente an einer Windelaußenseite der zweiten absorbierenden Kerne längs einer Längsrichtung der zweiten absorbierenden Kerne angeordnet sind, und die an Abschnitten der zweiten absorbierenden Kerne angeordneten elastischen Elemente eine niedrigere Dehnungsspannung als die elastischen Beinabschnittelemente aufweisen.

4. Wegwerfwindel nach Anspruch 1, 2 oder 3 wobei elastische Beinklappenseitenelemente an den gegenüberliegenden Seitenkantenabschnitten des absorbierenden Kerns am Schrittbereich der Windel längs der gegenüberliegenden Seitenkanten des absorbierenden Kerns angeordnet sind, und die elastischen Beinklappenseitenelemente eine niedrigere Dehnungsspannung als die elastischen Beinabschnittelemente aufweisen.

5. Wegwerfwindel nach einem der Ansprüche 1 bis 4, wobei der absorbierende Kern in einem Schrittbereich der Windel ein Paar Bereiche mit niedrigerer Steifigkeit als die anderen Bereiche aufweist, wobei das Paar der Bereiche mit niedrigerer Steifigkeit von den gegenüberliegenden Seitenkanten des absor-

bierenden Kerns entfernt angeordnet ist, und die elastischen Beinabschnittelemente so angeordnet sind, dass ihre mittleren Abschnitte jeweils die Bereiche mit niedrigerer Steifigkeit passieren.

6. Wegwerfwindel nach einem der Ansprüche 1 bis 5, wobei die gegenüberliegenden Seitenkanten des absorbierenden Kerns jeweils mit wasserabstoßenden Seitenlagen bedeckt sind, ein Paar dreidimensionale Kräuselfalten von einem Bauchseitenbereich zu einem Rückseitenbereich ausgebildet sind, jede der dreidimensionalen Kräuselfalten fest mit einer wasserabstoßenden Kräuselfaltenbildungslage mit einem elastischen Element versehen ist, die Kräuselfaltenbildungslage und die Seitenlage voneinander entfernt angeordnet sind, und ein seitlicher Absorptionsbereich mit einer nicht-wasserabstoßenden Oberfläche zwischen der Kräuselfaltenbildungslage und der Seitenlage ausgebildet ist.

Revendications

1. Couche-culotte jetable comprenant une feuille supérieure perméable aux fluides, une feuille de fond imperméable aux fluides et un cour absorbant rétenteur de fluides intercalé entre la feuille supérieure et la feuille de fond, ladite couche-culotte jetable comportant une face ventrale, une face arrière et une zone d'entrejambe disposée entre la face ventrale et la face arrière, des éléments élastiques de parties de jambe étant disposés en état d'étirement sur deux parties de jambe autour des jambes du porteur, où des parties d'extrémité longitudinalement opposées des éléments élastiques de parties de jambe sont prévues sur des zones respectives extérieures, dans la direction de la largeur, de bords latéraux du coeur absorbant, et où des parties centrales des éléments élastiques de parties de jambe sont incurvées de manière à correspondre à une zone d'entrejambe de la couche-culotte vers l'intérieur dans la direction de la largeur des bords latéraux du coeur absorbant, où le coeur absorbant est dans la zone d'entrejambe de la couche-culotte divisé en une paire de deuxièmes coeurs absorbants prévus sur des zones respectives extérieures, dans la direction de la largeur, des éléments élastiques de parties de jambe, et où un coeur absorbant central est segmenté entre les deuxièmes coeurs absorbants par la paire d'éléments élastiques de parties de jambe, et où les deuxièmes coeurs absorbants sont repliés vers la feuille de fond quand la couche-culotte est portée.

2. Couche-culotte jetable selon la revendication 1, où une longueur longitudinale des deuxièmes coeurs absorbants représente de 1/5 à 2/3 d'une direction longitudinale de la couche-culotte.

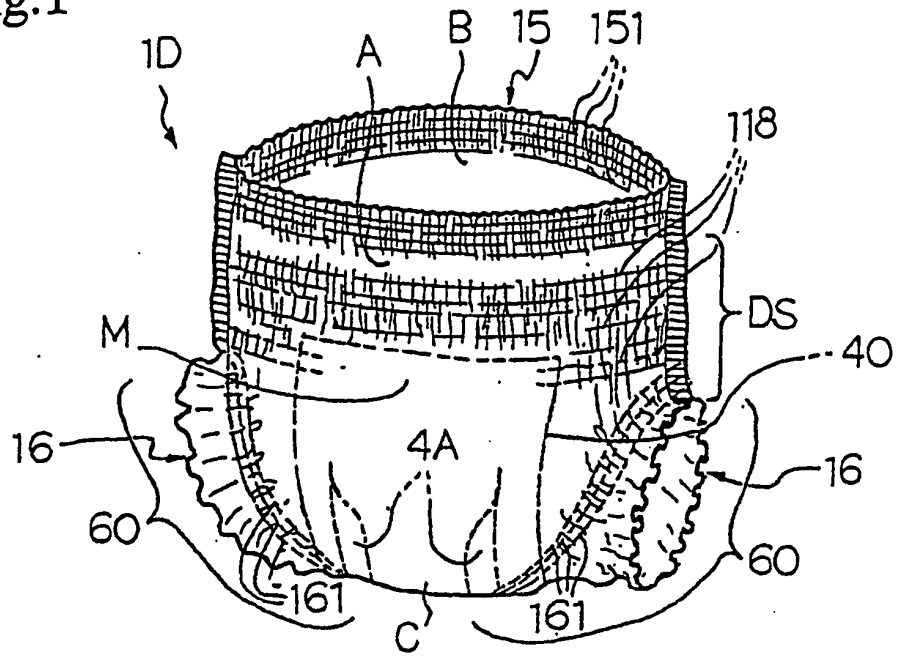
3. Couche-culotte jetable selon la revendication 1 ou 2, où les éléments élastiques de parties de deuxième coeur absorbant sont prévus sur un côté de surface extérieur - par rapport à la couche-culotte - des deuxièmes coeurs absorbants dans une direction longitudinale des deuxièmes coeurs absorbants, et où, en contrainte d'étirement, les éléments élastiques de parties de deuxième coeur absorbant sont de dimension inférieure aux éléments élastiques de parties de jambe.

4. Couche-culotte jetable selon la revendication 1, 2 ou 3, où des éléments élastiques de rabat de jambe sont prévus sur des parties de bords latéraux opposés du coeur absorbant dans la zone d'entrejambe de la couche-culotte, le long des bords latéraux opposés du coeur absorbant, et où, en contrainte d'étirement, les éléments élastiques de rabat de jambe sont de dimension inférieure aux éléments élastiques de parties de jambe.

5. Couche-culotte jetable selon l'une des revendications 1 à 4, où le coeur absorbant d'une zone d'entrejambe de la couche-culotte comprend deux zones de rigidité inférieure aux autres zones, les deux zones de moindre rigidité étant prévues éloignées des bords latéraux opposés du coeur absorbant, et où les éléments élastiques de parties de jambe sont disposés de telle manière que leurs parties centrales correspondent aux zones de moindre rigidité respectives.

6. Couche-culotte jetable selon l'une des revendications 1 à 5, où les bords latéraux opposés du coeur absorbant sont couverts par des feuilles latérales hydrophobes respectives, où deux fronces tridimensionnelles sont formées d'une zone ventrale à une zone arrière, chaque fronce tridimensionnelle étant fixement prévue avec une feuille hydrophobe formant la fronce avec un élément élastique, la feuille formant la fronce et la feuille latérale étant éloignées l'une de l'autre, et où une aire d'absorption latérale avec une surface non hydrophobe est formée entre la feuille formant la fronce et la feuille latérale.

Fig.1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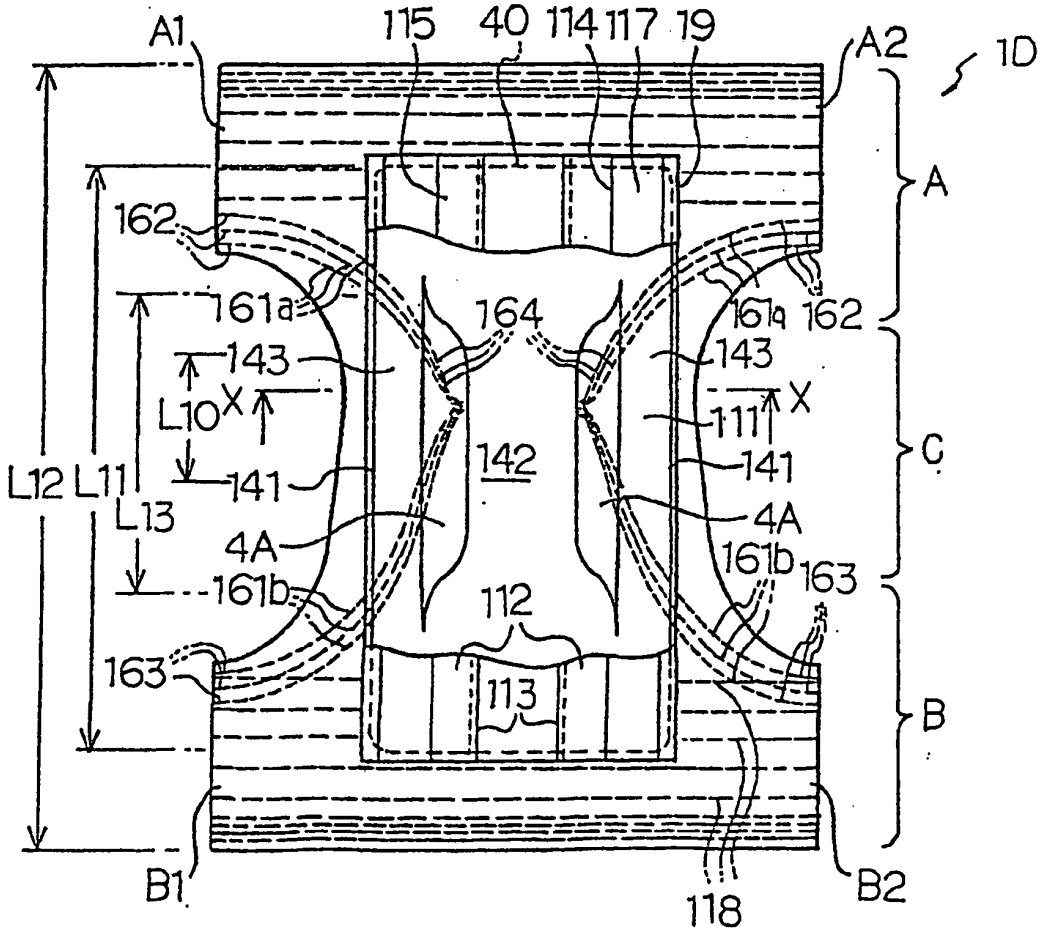
15
151
118
DS
M
40
16
4A
16
60
60
161
C
161

Fig.2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114
117
19
A2
1D
A
162
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161a
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X
111
142
141
141
L12
L11
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112
163
113
B
B1
B2
118

Fig. 3

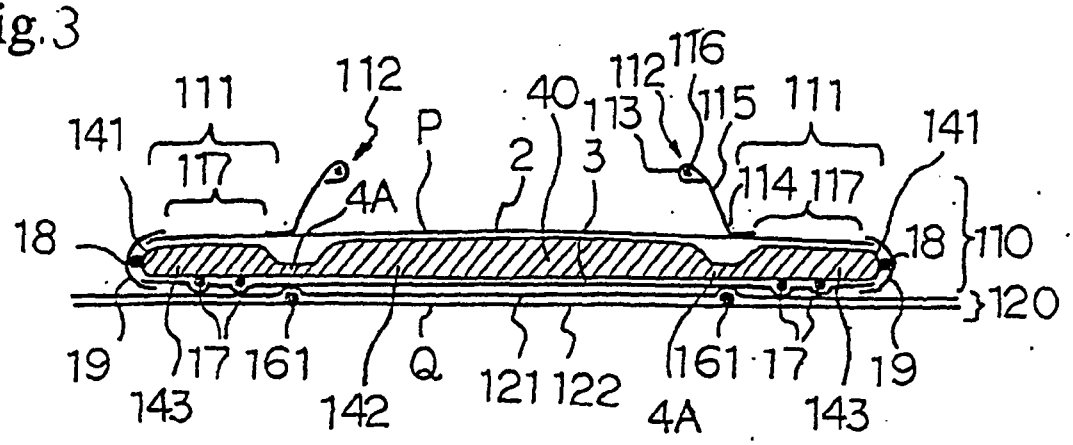


Fig. 4

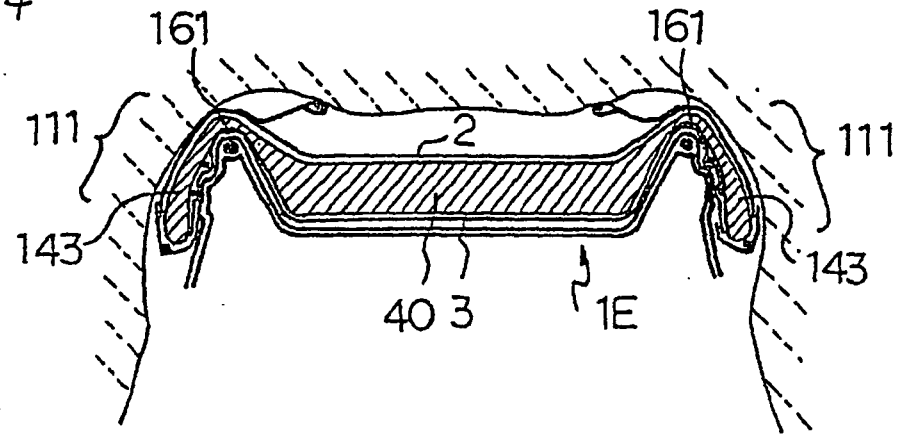
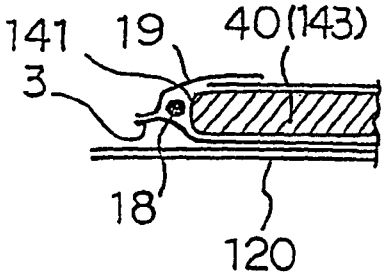


Fig. 5



REFERENCES CITED IN THE DESCRIPTION

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